

What is claimed is:

1. A method of delivering a protein to the bloodstream of a mammal, the method comprising the step of:

5       introducing a DNA construct into a pancreas cell *in vivo*, wherein the DNA construct comprises a DNA sequence of interest which encodes a protein and a eukaryotic promoting sequence operably linked to the DNA sequence of interest, wherein the introduced DNA construct is expressed and the protein encoded by the introduced DNA construct is delivered into the blood stream of the mammal.

10       2. The method of claim 1, wherein said introducing is by delivery of the DNA construct into a lumen of a pancreatic duct.

15       3. The method of claim 1, wherein the DNA construct is not contained within a viral particle.

20       4. The method of claim 1, wherein said introducing is by delivery of the DNA construct into a lumen of a pancreatic duct, and the DNA construct is not contained within a viral particle.

      5. The method of claim 1, wherein the protein is insulin.

      6. The method of claim 1, wherein the protein is growth hormone.

25       7. The method of claim 1, wherein the protein is clotting factor VIII.

      8. The method of claim 1, wherein the protein is erythropoietin.

9. The method of claim 1, wherein the mammal is a human and the protein is a human protein.

10. The method of claim 5, wherein the protein is selected from the group consisting of human growth hormone and human insulin.

11. A method of delivering a protein to the bloodstream of a mammal, the method comprising the step of:

introducing a DNA construct into a liver cell *in vivo*, wherein the DNA construct comprises a DNA sequence of interest which encodes a protein and a eukaryotic promoting sequence operably linked to the DNA sequence of interest, wherein the introduced DNA construct is expressed and the protein encoded by the introduced DNA construct is delivered into the blood stream of the mammal.

12. The method of claim 11, wherein said introducing is by delivery of the DNA construct into a lumen of a hepatic duct.

13. The method of claim 11, wherein the DNA construct is not contained within a viral particle.

14. The method of claim 11, wherein said introducing is by delivery of the DNA construct into a lumen of a hepatic duct, and the DNA construct is not contained within a viral particle.

15. The method of claim 11, wherein the protein is insulin.

16. The method of claim 11, wherein the protein is growth hormone.

17. The method of claim 11, wherein the protein is clotting factor VIII.

18. The method of claim 11, wherein the protein is erythropoietin.

5 19. The method of claim 11, wherein the mammal is a human and the protein is a human protein.

20. The method of claim 15, wherein the human protein is selected from the group consisting of human growth hormone and human insulin.

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